

DERBY. (H.)

THE

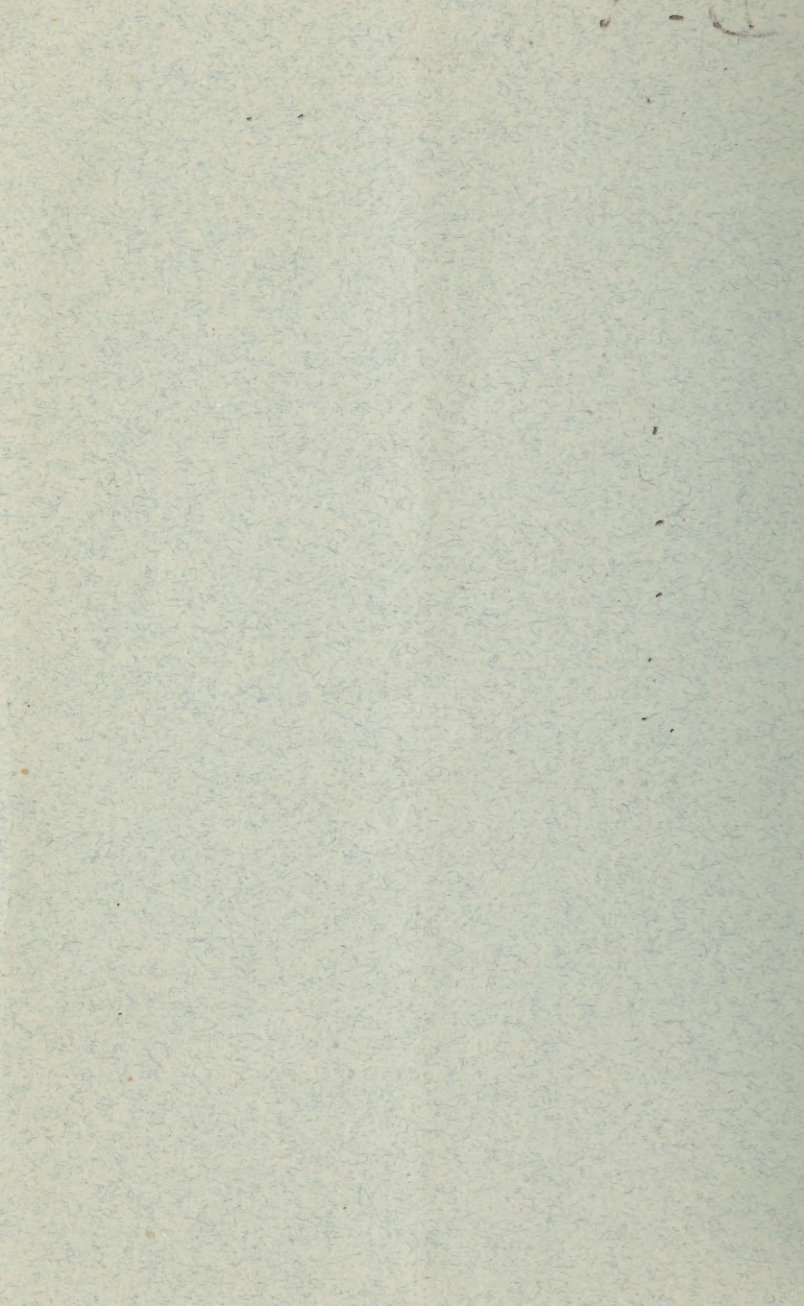
PREVENTION OF NEAR-SIGHT
IN THE YOUNG.

✓
BY HASKET DERBY, M. D.

READ BEFORE THE BOSTON SOCIETY FOR MEDICAL IMPROVE-
MENT, MAY 24, 1880.



REPRINTED FROM THE
Boston Medical and Surgical Journal,
JUNE 3, 1880.



THE
PREVENTION OF NEAR-SIGHT
IN THE YOUNG.

✓
BY HASKET DERBY, M. D.

READ BEFORE THE BOSTON SOCIETY FOR MEDICAL IMPROVE-
MENT, MAY 24, 1880.



REPRINTED FROM THE
Boston Medical and Surgical Journal,
JUNE 3, 1880.

ON THE PREVENTION OF NEAR-SIGHT IN THE YOUNG.¹

BY HASKET DERBY, M. D.

A BOY or girl is observed by the teacher, during the early years of school life, to see maps and drawings on the blackboard, across the room, less readily than the other scholars. After a time the parents' notice may be called to the fact, and in a small number of cases the child is brought to the surgeon. Expressions of incredulity are subsequently exchanged for those of astonishment when it is demonstrated to the parents that the child cannot see the largest letter of the test-card across the room, and that his farthest point of accurate vision is perhaps within twelve inches of his eyes. He has, without the knowledge of his family, become near-sighted. A difficulty has been fastened upon him that will act to his serious disadvantage through life, and the tendency to which he may transmit to his children. Though its progress may be modified by following suitable advice, it is now no longer capable of removal. Such cases occur with great frequency.

According to the best attainable statistics, there is found in the United States only about one third as much near-sight as is met with in Europe. And yet its prevalence in New England may be estimated from the

¹ Read before the Boston Society for Medical Improvement, May 24, 1880.

4 *Prevention of Near-Sight in the Young.*

fact that one person in ten who consults the ophthalmic surgeon does so on account of this very difficulty.

That near-sightedness is always a serious disadvantage to its possessor, that such an eye is in fact a diseased eye, that the affection is one that tends between certain ages to increase, and that exceptional increase may with advancing years lead to blindness are facts so often insisted on as to have become familiar to all who take an interest in this subject. Few states of the eye have been more accurately studied. The statistics collected have reached the limit of usefulness. The age at which myopia is likely to begin, the period of life during which it generally increases, the influence of civilization and education on its development, are all satisfactorily known. The hopelessness of its cure is universally conceded. But, in my opinion, far too little study has been bestowed on the possibility of its prevention. It is to this branch of the subject that I briefly invite attention.

The first question that arises, then, is as to whether prevention is possible. In answering this, two facts are to be taken into consideration: *First*, that near-sight is seldom, if ever, congenital, though a tendency to its development may undoubtedly be inherited. *Secondly*, that it is usually a product of civilization. This view receives support from those who have had the opportunity of examining the eyes of savage tribes. Furnari, among others, found no near-sight among the Kabyls. Macnamara states that he, some years ago, was among the Southals, the aborigines of Bengal, dwelling among the Rajahmahal hills. "I took," he says, "every opportunity of examining

the eyes of the people I was brought in contact with, for the purpose of discovering if myopia and such like diseases existed among them, but I never yet saw a young Southal whose eyes were not emmetropic" (that is, perfect). Other testimony is in the same direction.

The following is a brief summary of our knowledge regarding the appearance and progress of near-sight:—

It is not generally found at all among children who have not commenced school life.

Between the ages of six and seven some three school-children in a hundred are found, in this country, to be near-sighted.

This percentage steadily increases, and at the age of twenty at least twenty-six in a hundred are thus affected. The percentage rises to forty-two in Russia, and to sixty-two in Germany.

Other things being equal, the children of near-sighted parents are more apt to acquire near-sight than are those whose parents have normal vision.

The development of near-sight is furthered by the following causes.

- (1.) Work by insufficient light.
- (2.) Work on minute objects, such as fine print, intricate maps, and the like.
- (3.) Work in a constrained or stooping position.
- (4.) Continuous study, and
- (5.) Prolonged or excessive study.

The action of this last is well illustrated by an example given by Erismann. Four thousand three hundred and fifty-eight scholars being in the habit of studying out of the regular school hours, he found

6 *Prevention of Near-Sight in the Young.*

Of those studying two extra hours 17 per cent. were near sighted.

Of those studying four extra hours 29 per cent. were near-sighted.

Of those studying six extra hours 40 per cent. were near-sighted.

Such being the causes of near-sight, a large portion of the success that is likely to attend its prevention would depend on their judicious elimination. So much has already been written on this subject that it is needless to reiterate the advice given from every quarter. The necessity of well-lighted rooms, of clearly-printed text-books, of properly constructed desks and seats, has been clearly dwelt upon. The subject of prolonged study must be left to those more familiar than myself with the forcing system of modern education. A single word may, however, be permitted regarding the continuous use of the eyes in young children, and the mechanism of the production of near-sight.

A normal eye becomes myopic, of course, by growing longer, by the bulging out of its posterior segment. There is excellent authority for believing that this is peculiarly apt to take place in the children of near-sighted parents. They inherit a diminished power of resistance in this part of the organ of sight. The length of the eye may be normal at birth, but the scleral tissue of its posterior half is unduly elastic, and gives way more readily than it ought, during the period of development of the body. After this time is passed it may acquire new strength, and cease, after the twentieth year, to be liable to give way. Let us bear this tendency in mind, and remember, moreover,

Eulenburg's statement that ninety per cent. of curvatures of the spine, which do not arise from a special disease, are developed during school life. If now, in the case of a growing child, a constrained and unnatural position, long continued, may cause malformation of so solid a structure as the vertebral column, why may not a similarly constrained position (so to speak) of the eye cause a change in the shape of that organ? A bow must be kept unstrung to retain its elasticity. The continued effort of accommodation for near objects is accomplished by the change in shape of the crystalline lens from its least to its greatest convexity. And just as the bow, too long or injudiciously stretched, fails to regain its pristine shape, so does the crystalline, overstrained or fatigued, often refuse for a greater or less time to relax into the shape of rest, when the eye is sought to be adapted for only distant objects. This inability to relax we call "cramp of the ciliary muscle," "spasm of the accommodation," and it is the first step in a downward course.

Now one of the principal factors in bringing about the change of shape or lengthening in the posterior segment of the globe is this very exercise of the accommodation. It probably acts by throwing the choroid into a state of tension and inducing congestion. The eyes, therefore, used so continuously as to undergo spasm of the accommodation, are even more likely to become near-sighted than those in which the accommodation is relaxed as soon as near objects are no longer regarded.

Near-sight may then begin with spasm of the accommodation. A single case will serve as an illustration of this fact.

8 *Prevention of Near-Sight in the Young.*

I examined the eyes of a student at Amherst College, at the commencement of his freshman year, in November, 1875. He presented himself towards the close of the day; the afternoon was a dark one, and he had just been reciting. There was a slight degree of near-sight in each eye. In October of the next year I examined him again, and found his near-sight entirely gone. He had been laboring under accommodative spasm. But in June, 1879, at the completion of his college course, true near-sight, to a considerable amount, had made its appearance, and the ophthalmoscope showed it to be real, and not due to spasm.

This case is of great interest as illustrating the theory that near-sight frequently commences in the above manner; how frequently cannot at present be estimated. According to many, such cases are the rule; others think them the exception. But allow the fact that they do exist, and we have an important clew to the prevention of near-sight; for this spasm or cramp of the ciliary muscle yields readily to appropriate treatment. How often do we hear complaints from children that, after studying a time, distant objects appear blurred and indistinct! They can no longer tell time by the clock across the room, no longer make out figures on the blackboard. Such cases are often brought to the ophthalmic surgeon. With some of the children the spasm has already disappeared. With others a rest of a few days suffices to remove it. Others, again, require to be put under the full influence of atropine, to which, sooner or later, the thing must yield, as in the following instance:—

E. S., at the age of twelve, had never considered

himself near-sighted. Both parents have normal vision. His brother, aged seventeen, who came under my care at the same time, had a considerable amount of myopia, which up to the present has gone on steadily increasing. His sister, slightly older than himself, is similarly affected. In March of this year E. S. came to me again, complaining of pain in eyes on use, and inability to see distant objects distinctly. He was now near-sighted, and could not see sharply any object removed more than thirty-nine inches from him. I kept him three weeks under atropine, and the near-sight entirely disappeared, he being able, according to his own expression, to see as far as ever. We are warranted in the supposition that, had the difficulty not been recognized and the treatment employed, he would, like his brother and sister, have become near-sighted for life.

Assuming, then, as we are amply justified in doing, that cramp of the ciliary muscle is the first step in the development of near-sight in a number of cases, and knowing that the spasm, as such, is readily curable, the desirability of watching for its occurrence becomes evident. In fact, the extreme importance of recognizing all near-sight in its very earliest stage has been far too little insisted upon, for it is at this precise period that so much may be expected from judicious treatment, as well as from careful regulation of the child's habits, method of study, and length of time spent in school.

Unless measures be taken to prevent it, the percentage of near-sight among us is liable to increase as time goes on, largely through the transmission of the hereditary tendency.

10 *Prevention of Near-Sight in the Young.*

What course shall be adopted to prevent this? I would suggest the following plan: Let all children have their vision tested as soon as they know their letters; let a careful record be kept of the result; have the examination repeated at least twice a year during the whole of school life; and let near-sight be promptly treated as soon as its commencement is detected.

The school committee of Boston, for instance, might adopt some such plan as the following: A brief document, couched in popular terms, could be circulated among the teachers in the public schools, explaining the views just rehearsed, and giving instructions in the use of the test-types of Snellen or Monoyer. Each school should be provided with one or both of these cards, the price of which is trifling. The card itself should be hung in a room of sufficient length, and illuminated artificially at the time of examination, thus securing uniform intensity of light on every occasion. At its entrance into the school each child should have its vision tested by the card, in each eye separately, and a record kept of the result. This examination might be repeated at least once in six months during school life, and any change noted.

Thus far the whole matter may safely be left in the hands of a tolerably instructed teacher. If, now, a child, that has previously had perfect sight, is observed to see less and less on successive trials, the assumption is that near-sight is commencing. The family should now at once be notified, and advised to apply to their physician. With the instruction in ophthalmology now given in our leading medical schools, it will be easy for him to carry the examination farther, to recognize the presence of near-sight, and to prescribe the neces-

sary rest or atropine treatment, that, if the case has been taken in time, will restore the eye to its normal condition. If the myopia refuses to yield to atropine, and in moderate amount has to be accepted as a life-long disadvantage, suitable advice will certainly modify its progress.

If sufficient interest can only be awakened in the subject, and if this course be followed, I do not see why the amount of near-sight in the community may not ultimately be considerably diminished. Let the absurd traditions of the past, that myopia is due to an increased convexity of the eye, and is even an evidence of strength of sight, be once fairly banished from the popular mind. Let it be insisted on in season and out of season that near-sight is a disease, a product of civilization, arising generally during school life, often curable if promptly met, always incurable and even progressive if neglected, invariably a disadvantage to its victim, and sometimes in later life fatal to sight; let these facts be fairly brought forward and understood, and the next generation will have better and stronger eyes than those of the past, and that of the present.

There will be no near-sighted children turned out by the schools of Dr. Richardson's City of Health.

BOSTON MEDICAL AND SURGICAL JOURNAL.

ENLARGED WITHOUT INCREASE OF PRICE.

THE marked success which has followed all the methods adopted, within the past few years, to increase the value and enlarge the scope of the *Boston Medical and Surgical Journal* has induced the proprietors to make another change, which its patrons can hardly fail to approve and value highly. The JOURNAL, beginning with January 1, 1880, was changed from octavo to quarto form, and printed in double columns; the number of pages of reading matter was made twenty-four. By this change about one fifth more matter is now given than before, which enables the proprietors of the JOURNAL to make it more nearly what they have long aimed at, and what they believe the medical profession now needs, a *National Medical Newspaper*, which interferes with no local journals, but affords a medium for a general interchange of medical opinion, and which furnishes its readers all kinds of information useful to physicians, surgeons, and others whose business brings them in contact with the profession. This information must be very comprehensive, including articles of great scientific value from the "authorities," discussions of methods and results of practice, and the freshest medical news.

None of those features which have proved so satisfactory in the *Boston Medical and Surgical Journal* have been discontinued, — Clinical lectures by eminent professors, special papers on topics of large and general interest by distinguished practitioners, reports of interesting facts and medical news from all important centres, reviews of new medical works, and such bibliographical information as may be of value to the profession. All these are continued and enlarged, and new features have been added.

Medical jurisprudence is included, at least so far as to give sufficient abstracts of cases involving interests or principles that concern the members of the profession as individuals. New medicines, new uses or applications of remedial agents already known, and information of value to druggists, as well as to physicians, receive attention.

In short, it is proposed to make the Journal so comprehensive in scope and so practical in character, and including so fully and in so desirable form all the various kinds of information and discussion that may properly be embraced or sought in a medical journal, that it will be indispensable to every American physician.

It has enlisted in its service, as editors and contributors, many of the ablest and most distinguished professors and practitioners of medicine and surgery in the United States, and the original papers and discussions it contains are of the first value to all physicians and surgeons in active practice. Without disparaging any other medical journal it may fairly be said that no surgeon or physician can afford to be without the BOSTON MEDICAL AND SURGICAL JOURNAL.

All its contents are *original*, its reports and news, as well as the elaborate papers on important topics of theory and practice.

N. B. *Although the JOURNAL contains so much more matter than heretofore, its price has not been increased.*

The JOURNAL continues under the editorial management of DR. J. COLLINS WARREN, who is assisted by DR. A. L. MASON, DR. GEORGE SHATTUCK, DR. G. W. GAY, DR. HAMILTON OSGOOD, of Boston; DR. P. BRYNBERG PORTER of New York; DR. FRANK WOODBURY, of Philadelphia; DR. WM. LEE, of Washington; DR. NORMAN BRIDGE, of Chicago; DR. M. H. POST, of St. Louis; DR. MIDDLETON MICHEL, of Charleston, S. C.; DR. V. O. HARDON, of Providence; and DR. WILLIAM CHILD, of Bath, N. H.

TERMS: \$5.00 a year, in advance; single number, 15 cents.

N. B. — A life-size portrait of DR. OLIVER WENDELL HOLMES will be furnished for One Dollar to any subscriber to the JOURNAL.

HOUGHTON, MIFFLIN & CO., Publishers, Boston, Mass.